Sept. 5, 1967 L. D. DUNN ET AL 3,340,130

LABEL LAMINATOR DEVICE

Filed Nov. 19, 1964 2 Sheets-Sheet 1

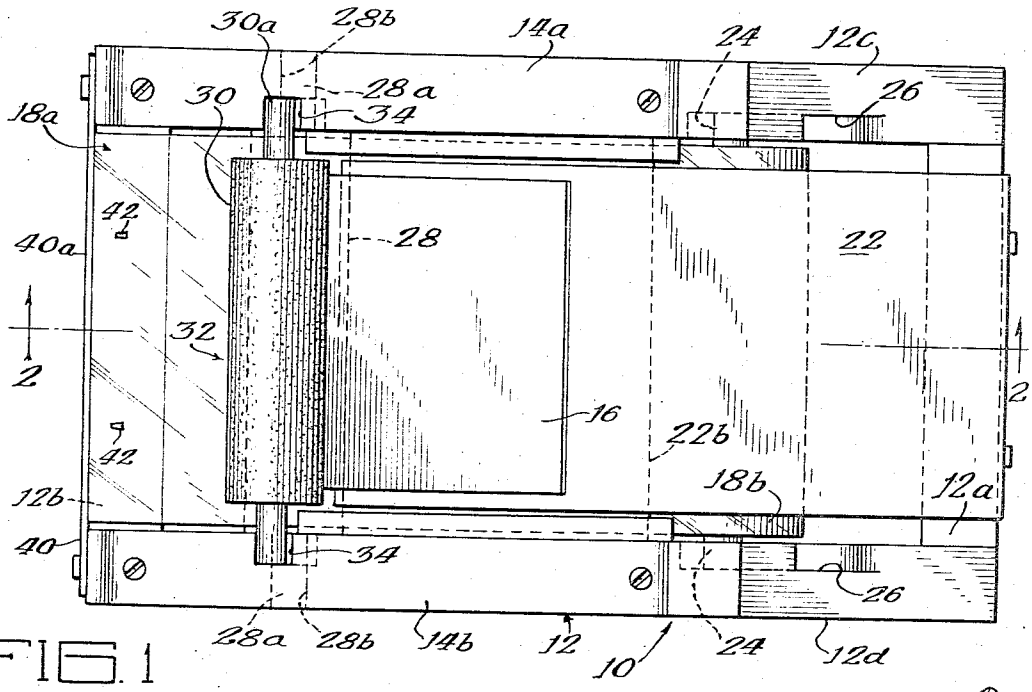
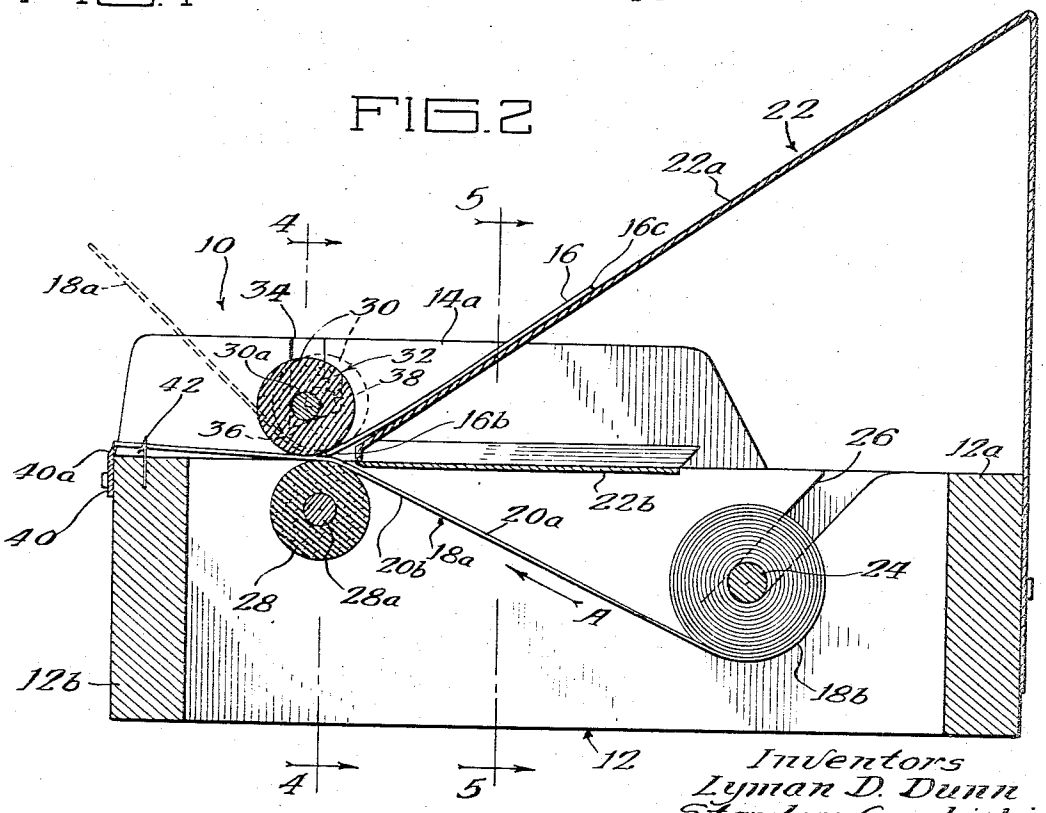


FIG. 1

FIG. 2



Inventors
Lyman D. Dunn
Stanley Gembicki
By: Hofgren, Wegner, Allen, Stellman & McCord
Attorneys

Sept. 5, 1967 L. D. DUNN ET AL 3,340,130

LABEL LAMINATOR DEVICE

Filed Nov. 19, 1964 2 Sheets-Sheet 2

FIG. 3

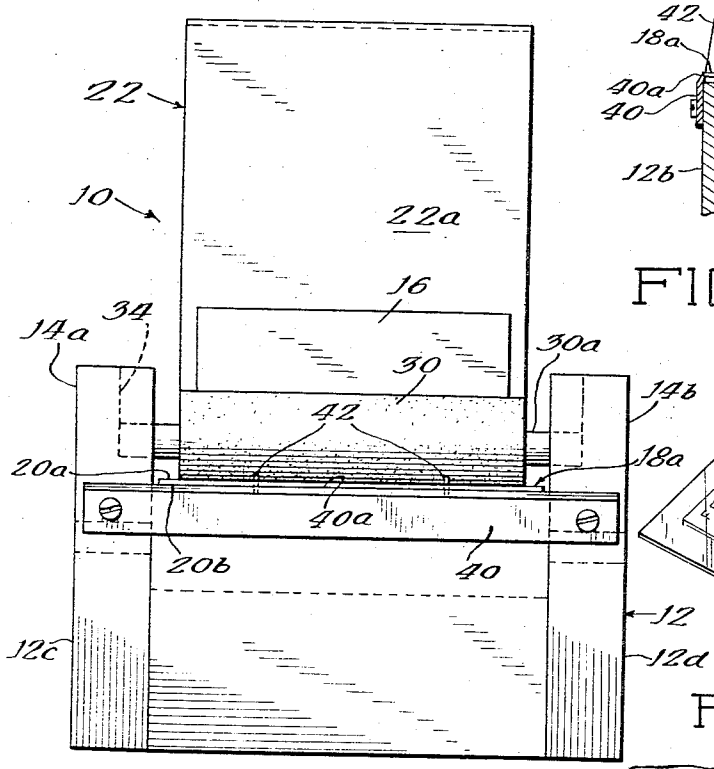


FIG. 7

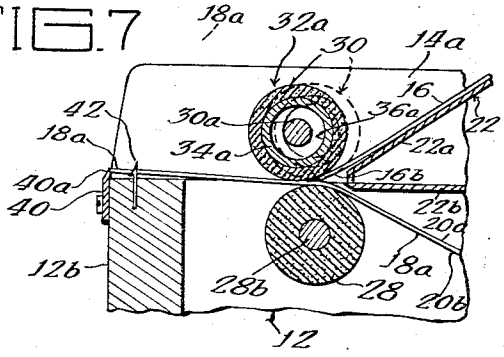


FIG. 6

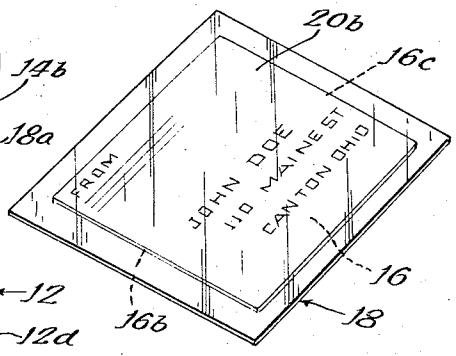


FIG. 5

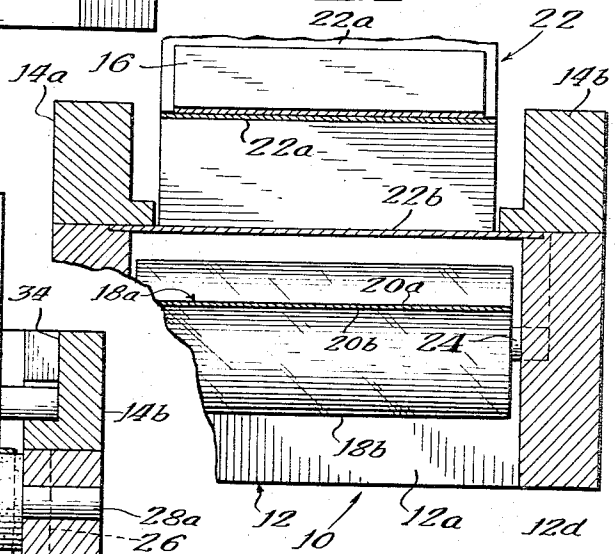
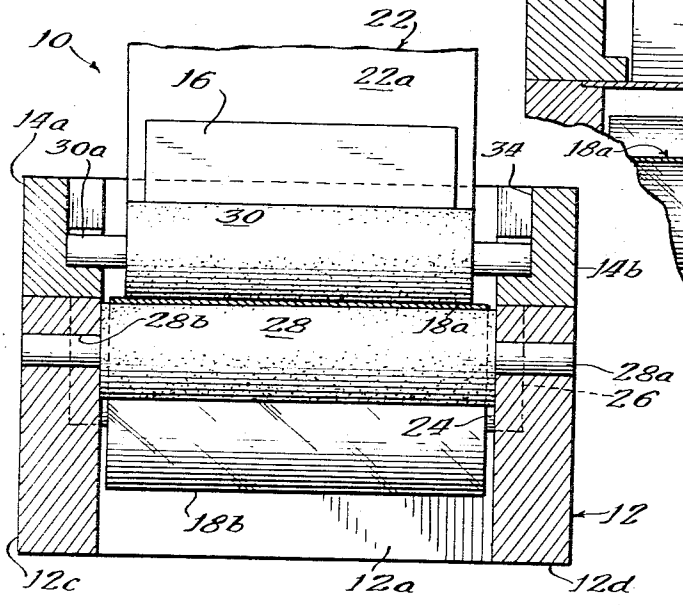


FIG. 4



United States Patent Office 3,340,130 Patented Sept. 5, 1967

3,340,130

LABEL LAMINATOR DEVICE

Lyman D. Dunn, Chicago, and Stanley Gembicki, Des Plaines, Ill., assignors to Marlan Company, a corporation of Illinois

Filed Nov. 19, 1964, Ser. No. 412,394
11 Claims. (Cl. 156—552)

This application relates to laminating devices and more particularly to a new and improved device for coating a tag or card with a strip of adhesive.

Many tags, cards, envelopes or labels are affixed to packages, large envelopes, or the like, either by applying an adhesive coating to the back of the tag, by activating a self-contained supply of adhesive on the tag, or by the use of staples. After so preparing the tag for securement to the envelope or carton, the tag is then placed thereupon leaving the information bearing surface exposed not only to view, but also exposed to the elements and to engagement with other packages or the like during handling and transit. This may be true whether the tag is a mailing label placed on a package or an envelope affixed to a package to be sent through the mails, or whether it is some sort of an information card or tag to be suitably applied to a file or the like which may be subjected to abuse either in every day use or in storage.

Thus it has become desirable to provide a means for affixing a transparent protective coating to a label or tag which is to be affixed to an appropriate surface of a container, and it has become further desirable to provide such a protective coating which also affords the adhering surface for the label or tag.

It is therefore a general object of this invention to provide a new and improved laminating device.

It is a primary object of this invention to provide a new and improved laminating device adapted to provide a protective coating over the information bearing face of a tag or label wherein the protective coating has peripheral borders which extend beyond the borders of the tag or label to present an adhesive surface by means of which the coating as well as the tag or label may be secured to a suitable surface.

It is another object of this invention to provide a laminating device having means for permitting the initial engagement of the tag or label with the adhesive coated surface of a protective film and having further means responsive to movement of the free end of the film to bring the information bearing face and the adhesive bearing faces into smooth and continued juxtaposition to thereby produce a tag having a protective coating thereon with adhesive bearing peripheral borders for securement of the label to an appropriate surface.

It is still another object of this invention to provide a new and improved label laminating device having a roll of adhesive coated transparent film rotatably mounted in a device and a set of pressing rollers spaced from the roll of adhesive film and closely spaced from each other through which a leading strip of adhesive film may be webbed and provided with a means for feeding the tag or label between the pressing rollers so that the tag may initially contact the sticky surface of the adhesive film and wherein the rollers are mounted in such a fashion so that, in response to a pull on the leading edge of the adhesive strip, the rollers will be moved into operative engagement wherein a continued pull on the tape will cause the mutual advancement of the tag and tape and press the tag into smooth adherence with the tape.

It is yet another object of this invention to provide a laminating device wherein the pressing rollers are normally misaligned relative to each other so that a tag may be inserted therebetween with the free end of the tag positioned at a point substantially in alignment with the operating bight of the rollers, the means for mounting the rollers responsive to advancement of the tape to move one misaligned roller to an operating position wherein the free end of the tag is initially pressed against the tape whereupon continued advancement of the tape subsequently draws the tape and tag between the rollers to produce a lamination thereof.

Yet another object of this invention is to provide a laminating device having means therein for preventing the retraction of a free end of a strip of tape during periods of non-operation of the device.

Other objects, features and advantages will become apparent from the following detailed description taken in connection with the accompanying drawings in which:

FIGURE 1 is a top plan view of the device of this invention;

FIGURE 2 is a longitudinal section view of the device shown in FIGURE 1;

FIGURE 3 is a front elevational view of the device of this invention;

FIGURE 4 is a fragmentary vertical section view taken along the line 4—4 of FIGURE 2;

FIGURE 5 is a fragmentary vertical section view taken along the line 5—5 of FIGURE 2;

FIGURE 6 is a perspective view of a laminated label produced by the device of this invention; and

FIGURE 7 is a fragmentary sectional view of a portion of the device of this invention showing a modified arrangement for mounting the upper pressing roller for movement to a laminating position in response to a pull on the leading edge of the adhesive strip.

Referring now to the drawings, the label laminator **10** of this invention is shown as comprising a housing **12** which includes rear wall **12***a*, front wall **12***b*, side wall **12***c* and side wall **12***d*. Mounted on the top of either side wall **12***c* and **12***d* are the lateral rails **14***a* and **14***b*, respectively.

The label laminator of this invention is intended for use with a card, label, tag or the like, **16**, and is adapted to provide a film covering **18** thereover. For this purpose, a roll **18***b* of preferably transparent polyester film or tape is rotatably mounted between the sides of the housing for providing leading strips **18***a* which may be withdrawn therefrom. The film is provided with a sticky or adhesive coated side **20***a* and a smooth or non-adhesive side **20***b*. The general purpose of the device is to feed a tag or label or the like into facial engagement with the adhesive coated side of the clear plastic film to secure the tag to the film and provide a protective covering thereover. In particular, if the tag has an information bearing side, which is common for mailing labels and the like, the information bearing side is to be placed aganst the stcky side of the tape so that it may show through. In addition, the relative width of the tape is inended to be such that it will exceed that of the tag and, the location of a means for severing selected lengths of the strips is to be such so that, in combination with the relative widths of the tape and the tag, the finished laminated product will be provided with peripheral borders of adhesive film by means of which the lamination may be secured to any desired surface, thereby adequately protecting, as well as adequately securing, the laminated tag, card or label or the like with, if desired, the information bearing side of the tag presented to view through the transparent film.

To this end, the laminator is provided with a tag support or feed means **22**. In the preferred embodiment, means **22** is shown as having a forwardly and downwardly inclined face **22***a*. It is to be understood that the means **22** is provided for feeding the card **16** in such a manner as to position the card for initial engagement

with the sticky side **20***a* of the strip **18***a* and that other configurations may suffice for this purpose. The roll is positioned in the illustrated embodiment with the adhesive side **20***a* facing up. To prevent the accumulation of dust particles and the like on the tape during inoperative periods, a dust shield **22***b* is provided in the area above the tape. The roll **18***b* is wound about a spindle **24** which rotatably rests in an inclined slot or groove **26** formed in each of the side walls **12***c* and **12***d*. The slot is open at the top end so that the roll may be easily inserted or withdrawn from the housing.

Mounted in the housing near the front wall **12***b* are the pressing members, laminating means or rollers **28** and **30**. Roller **28** is shown positioned below the roller **30** in the preferred embodiment and will hereinafter be referred to as "lower" roller. This roller is mounted about a spindle or pin **28***a* which is rotatably journaled in a suitable opening **28***b* formed in each of the side rails **14***a* and **14***b* to rotatably mount the roller in the housing generally transverse to the longitudinal extent thereof, as well as transverse to the longitudinal extent of the strip **18***a*. The roller **30**, hereinafter referred to as "upper" roller is similarly mounted about a spindle or pin **30***a* in general alignment with the roller **28**, transverse to the longitudinal extent of the housing and the longitudinal extent of the strip **18***a*.

In the art of laminating a continuous paper-like strip to a tape, it is well known that this may be accomplished by webbing the strip and tape between the pressing rollers to bring the same into facial engagement. Continuous advancement of the tape also continuously draws the strip therewith. However, there are problems encountered in attempting to laminate envelopes, tags or cards of finite length to a relatively continuous or endless tape which are different from those encountered in the lamination of a relatively continuous or endless strip with the tape. In particular, in strip lamination once the initial free edge of the strip is webbed between the rollers together with the tape to which it is to be laminated, there is no further problem of presenting a forward edge of the strip to the rollers, nor is there the problem of unlaminated tape held between the rollers during periods of non-activity. However, with sequential tag lamination, these problems do occur.

In strip or tag lamination, the tag or strip and the adhesive coated film to which the tag or strip is to be laminated are passed through a restricted laminating passage (usually rollers or stationary arcuate surfaces) between which the dhesive and the strip or tag are firmly pressed together. The distance between these laminating members must be at least slightly less than the combined thickness of the adhesive and the strip or tag. Attempts to feed a tag of finite length for laminating into such a passage produced undesirable results. Moreover, because of the necessity for the close conetact between the laminated members and because of the presence of an uncoated adhesive surface at the lamination point when attempting tag laminations, the adhesive would tend to adhere to the periphery of one of the rollers and removal therefrom presented difficulties. Thus it is desirable to provide a laminating device capable of laminating cards or labels to a continuous strip of tape. To this end, the laminator of this invention is provided with a novel arrangement for mounting the pressing rollers.

In particular, the upper roller is mounted in the rails **14***a* and **14***b* by means **32** for normally positioning the roller in an inoperative position and for moving the upper roller to an operating position responsive to an advancement on the strip of tape **18***a*. In the preferred embodiment shown in FIGURES 1 through 4, this means includes an upright slot **34** formed in each of the rails **14***a* and **14***b* and opening to the top thereof, permitting easy insertion and removal of the roller. The slot **34** is provided with an upwardly and rearwardly inclined bottom or cam surface **36** and terminates in a laterally offset

recess or notch **38**. The roller spindle **30***a*, inclined bottom **36** and notch **38** combine to provide a means responsive to an upward and forward pull on the tape, such as when the tape is in the dotted outline position shown in FIGURE 2, to cause the upper roller to cant upwardly and rearwardly so as to come in substantially direct vertical alignment with the lower roller, which position will be hereinafter referred to as the operating position, wherein continued advancement of the tape causes advancement of the tag **16** and the tape through the pressing rollers for firmly and smoothly securing the tag to the sticky side of the tape. An alternate means **32***a* for mounting the upper roller is shown in FIGURE 7 wherein the upper roller is mounted about a sleeve **34***a* having an enlarged bore **36***a* which permits the same movement to be imparted to the upper roller responsive to an upward and forward pull on the tape as was described relative to the means **32** shown in FIGURES 1 through 4.

The slot **34** and notch **38** also provide a means for mounting the roller **30** so that the rollers **28** and **30** are freely adjustable relative to each other to accommodate laminations of different thicknesses. As previously mentioned, the slot **34** is open to the top of the side rails in which it is formed. The notch **38** has a greater cross-sectional depth than the diameter of the spindle **30***a* so that the spindle, and therefore the roller, is free to move vertically relative to the notches **34** and **38** for a limited distance, which movement is reflected as movement toward and away from the roller **28**. Thus the upper roller is free to "float" to accommodate the thicknesses of the product being laminated. This tends to insure an equal pressure throughout the lamination (the pressure being only the weight of the roll) to promote straight, wrinkle-free laminating. Where the rollers **28** and **30** are fixed relative to each other, if the laminated product fed therethrough is too thick for the passageway between the members, the lamination will be fed unevenly because the product tends to pull towards the side where the bind is greatest. In addition, wrinkling of the lamination frequently occurs in these circumstances. The device of this invention requires no adjustment for different thicknesses of card, tag or envelopes to be laminated and insures proper alignment of the materials fed therethrough since only the weight of the free floating roller acts upon the laminated product. Thus, due to the weight of the upper roller and its self-aligning feeding, equal pressures are applied throughout the entire range of the label at the point of roller contact, irrespective of the thickness of the label to be laminated. Because the notch **38** is inclined upwardly and rearwardly even though the spindle **30***a* and roller **30** are substantially free floating, the inclination of the notch promotes the influence of gravity upon the roller to insure that the roller weight will be influential during lamination.

A cutting knife **40** is mounted near the top of the outside of the front wall **12***b* so as to present a sharp cutting edge **40***a* at a height which is slightly higher than the bottom of the top roller **30**. The selected lengths of tape which have been pulled between the pressing rollers may be cut by a downward pull along the knife edge to separate the laminated tag and tape from the remainder of the strip at a point spaced rearwardly of the rear edge **16***b* of the tag thereby providing a forward and rearward peripheral border of adhesive film. This also leaves a sufficient forward marginal portion of the strip to facilitate finger grasping thereof for the next operation of the device which forward marginal portion may become the forward peripheral border of the laminated product.

Mounted on the top of the front wall **12***b* and slightly to the rear of the knife **40** are impaling means, or tape retraction prevention means, or barbs **42**. When the tape is pulled downwardly along the knife edge to sever a selected portion, these barbs **42** will puncture the tape, thus

holding the same against retraction or rearward movement and insuring that a suitable length of the free end of the tape is always available to permit facile grasping thereof for the next operation of the device. A simple upward movement to the dotted outline position as shown in FIGURE 2 will easily release the tape from its impalement upon the barbs **42**. The height of the cutting edge and location of the barbs which require an initial upward movement of the free end of the tape prior to advancement thereof, tend to cause an operator to naturally properly position the tape for moving the upper roller to an operative position prior to advancement of the tape.

In operation, a card, label or tag, or the like, **16**, is placed on the forwardly inclined face **22***a* so that the free end of the tag **16***b* contacts the sticky side **20***a* of the tape. Because the upper roller is normally slightly forwardly misaligned (relative to the direction of advancement) of the lower roller, this permits the free end of the tag to be initially positioned at a point which is almost in direct alignment with the axis of the two rollers, when the upper roller is in the operating position. The free end of the tape is then lifted upwardly and released from its impalement on the barbs **42** to the dotted line position shown in FIGURE 2. This causes the upper roller to cant upwardly and rearwardly into alignment with the lower roller and thereby squeeze the free end of the tag therebetween to initially press the free end against the sticky surface of the tape whereupon continued advancement in the direction indicated by the arrow A in FIGURE 2 will cause successive adherence of the tag to the sticky side **20***a* of the tape. Moreover, the pressing engagement of the two rollers is such that any irregularities in the label as it is fed therebetween will be smoothed out by the rollers so that the finished product will present a smooth and non-wrinkled appearance.

When the trailing edge **16***c* of the tag has been advanced to a point wherein it is spaced forwardly of the knife **40**, the tape may then be brought downward across the knife edge **40***a*, causing impalement of the tape to the rear of the knife edge to provide a finished product as shown in FIGURE 6 which constitutes a laminated label having a surface of clear transparent film and an adhesive coated peripheral border to facilitate securement of the laminated label or tag to an appropriate surface.

It is to be understood that the embodiments shown in these drawings are only a few of the specific structures which can employ the concept of this invention, that concept being the provision of a means for mounting the pressing members which permits the leading end of tags of different thicknesses to be initially positioned in engagement with the adhesive surface of a tape at a point on one of the members which becomes the point of laminating engagement of the two pressing members when the laminating device is operated and the tape is advanced. Because of this provision, the free end of the tag is initially pressed against the sticky surface of the tape upon initial advancing movement of the tape which brings one pressing member into operative alignment with the other member so that subsequent advancement of the tape feeds the tape and tag between the pressing members to produce the laminated product. It is to be further understood that while the specific mode of tape advancement shown in the preferred embodiment is by hand pulling, that more sophisticated means utilizing well-known crank structures or other mechanical or electromechanical advancing means could be employed within the concept of this invention. The structure and concept disclosed herein affords a simple yet fool-proof means for suitably laminating tags, such as labels, cards or the like, in a facile and rapid manner.

The foregoing detailed description is given for clearness of understanding only, and no unnecessary limitations should be understood therefrom for some modifications will be obvious to those skilled in the art.

We claim:

1. A laminating device for applying tags to adhesive strips, comprising: a housing; a roll of tape rotatably supported in said housing; pressing means in said housing spaced from said tape roll forming a laminating passage through which a strip of tape from said roll is webbed; means on said housing for feeding a tag between said pressing means in a position to contact the tape webbed therethrough; means for mounting said pressing means in said housing for movement between a normal position wherein the pressing means is out of laminating engagement relative to the tape and tag fed therebetween, and a laminating position wherein the pressing means is in a position to laminate tapes and tags fed therebetween, said mounting means for said pressing means being movable responsive to advancement of the tape to move the pressing means into laminating engagement for initially pressing the tag on the tape, whereupon continued advancement of the tape continues the lamination of the tag to the tape.

2. The laminating device of claim **1** wherein a cutting edge is provided spaced from said pressing means so that selected strips may be severed from the tape after having been passed between the pressing members.

3. The laminating device of claim **2** including means spaced slightly rearwardly of the cutting edge but forwardly of the pressure means for preventing the retraction of a leading portion of the tape so that a leading portion will always be in a position for rapid and easy securement thereof.

4. The laminating device of claim **1** wherein the means for pressing comprises a pair of rollers and said rollers are freely adjustable relative to each other to accommodate laminations of different thicknesses, and the means for mounting the rollers includes a cam slot formed in the housing from which one of the rollers may be easily withdrawn at any time without the need for tools.

5. The laminating device of claim **1** wherein the means for pressing comprises a pair of rollers and the means for mounting the rollers includes an enlarged bore in one of the rollers relative to a mounting pin extending therethrough which adapts the roller for movement relative to the pin responsive to advancement of the tape.

6. The laminating device of claim **4** wherein the means for feeding the tag between the rollers includes an inclined plate which is positioned to feed the tag so that the free end of the tag contacts the tape at a point on the periphery of one of the rollers with the face of the tag spaced from the other roller when the other roller is in the normal position, and wherein said face of the tag is so positioned that when the tape is advanced and the other roller moves responsive to said advancement to the operating position, the periphery of the other roller will engage the face of the tag to press the free end of the tag against the opposing surface of the tape.

7. A laminating device for applying tags to adhesive strips, comprising: a housing having spaced side, front and rear walls; a roll of tape rotatably supported in said housing between said side walls; a pair of laminating rollers in said housing spaced from said tape roll and closely spaced from each other to form a laminating passage through which a strip of tape from said roll is webbed; means on said housing for feeding a tag between said laminating rollers in a position to contact the tape webbed therethrough, one of said rollers being normally offset relative to the other relative to the tag feeding means to permit the leading edge of a tag to be initially positioned at the point of laminating engagement of the rollers, said one roller mounted by means responsive to advancement of the tape to move the roller into laminating engagement with the other roller to initially press the leading edge of the tag on the tape, so that continued advancement of the tape causes continued lamination of the tape and the tag.

8. A laminator for applying tags to adhesive strips, comprising: a housing having spaced side, front and rear walls; a roll of tape rotatably supported in said housing between said side walls, a pair of laminating rollers mounted in said housing in substantially vertical tandem in spaced relationship to said tape roll and closely spaced from each other, said mounting of said rollers forming a laminating passage through which a strip of tape from said roll is webbed; means on said housing for feeding a tag between the rollers in a position to contact the tape webbed therethrough; and a slot for mounting one of said rollers to normally position the roller slightly ahead of the other roller relative to the tag and tape supply means and slightly below the other roller relative to the lower periphery of the one roller and the upper periphery of the other roller, said slot being inclined upwardly and rearwardly to position the laminating rollers in laminating engagement responsive to an upward and rearward pull on the tape and to move the upper roller out of laminating engagement with the lower roller responsive to release of an upward and forward pull on the tape.

9. The laminating device of claim 8 wherein the laminating rollers are mounted in said housing rearwardly of said front wall and said front wall is provided with a knife edge for severing selected strips of tape, the upper edge of said knife edge lies in a plane slightly higher than the lower edge of the upper roller when said upper roller is in laminating engagement with said lower roller.

10. The laminating device of claim 9 including means on said front wall spaced slightly rearwardly of the cutting edge for preventing the retraction of a leading portion of the tape.

11. The laminating device of claim 8 wherein said roll of tape is mounted in said housing rearwardly and below said laminating rollers in a position wherein a leading strip of the tape is fed upwardly and forwardly therefrom to the laminating rollers.

References Cited

UNITED STATES PATENTS

124,258	3/1872	Dickerman	156—552
2,307,406	1/1943	Howard	156—554
2,335,033	11/1943	Tompkins	156—552

EARL M. BERGERT, *Primary Examiner.*

DOUGLAS J. DRUMMOND, *Examiner.*